

Improvements (Program I)

This program identifies the deficiencies in the size, design, and/or location of the highway system and identifies potential solutions to solve the deficiencies by building new capacity or modifying existing facilities. These capital projects represent a significant investment to improve the state's highways. The I Program is divided into four subprograms:

Mobility subprogram – builds projects that create new roads and/or modifies the existing highways to reduce congestion and improve operational efficiencies;

Safety subprogram – modifies existing highways to increase safety;

Economic initiative subprogram – modifies existing highways to support the economic health of the state; and

Environmental retrofit subprogram – corrects outdated features that are primarily drainage related on existing highways that otherwise could lead to damage to the environment.



HOV lanes, like these on Interstate 405, increase the movement of people.

Mobility (Subprogram I1)

This subprogram's projects create new roads and/or modify existing highways to relieve congestion and improve operational efficiencies. These projects typically focus on moving people, connecting different modes of travel, and supporting alternative modes of transportation. Many people in the state agree that congestion in the urban centers of the state severely damages the economic competitiveness of the state.



Congestion in Seattle and other urban centers can damage the economics of the entire state.

Included in the HSP is a broad mix of strategies to address congestion. These include adding new highways and lanes, optimizing highway operational efficiencies, and managing demand on the highways to reduce travel delay within heavily congested highways.¹ The mobility subprogram includes some of the most costly and important capital investments including:

Roadway Expansion to increase system capacity through capital investments in highway widening, improving connections and passing/climbing lanes.

Managing Access to state highways by limiting driveways and cross traffic preserves highway capacity where growth is expected and maximizes existing highway capacity and safety where development has occurred.

In addition, the HSP includes strategies that focus on moving more people rather than more cars. These strategies support regional transit and bus systems, as well as transportation demand management strategies.

The HSP includes the following:

Emphasis on High Occupancy Vehicle (HOV) Lanes to provide more reliable and faster travel times during congested conditions for transit, vanpool, and car pool users.

Park & Ride Lots which make car and van pooling and riding the bus more convenient.

Bicycle and Pedestrian Strategies integrate relatively low-cost strategies, local and urban bicycle, and pedestrian networks.



Park&Ride lots, like this one in King County, are adding to congestion relief.

¹ Congestion is typically defined by when, how often, and for how long a driver is delayed or even stopped. With the varying geographic conditions of the state, defining congestion on a statewide basis is a difficult task, as is the problem of identifying highway segments for the purpose of qualifying for congestion relief investment. In the past, WSDOT compared each highway's peak hour volume to capacity (V/C) ratio. This method demonstrated congestion levels only during the peak hour but many segments of highways experience congestion outside of the "peak hour," something the V/C method does not measure.

A more refined deficiency analysis was developed and used in this HSP. The new analysis uses an array of data to take account of the severity of congestion over a 24-hour period. Index values under the new system range from 1 (little to no congestion) to 24 (theoretically congestion over the entire 24 hours in a day). This congestion indicator enables the comparison of each highway's daily volume of traffic to a one-hour capacity.

The Washington State Transportation Commission adopted thresholds to establish "congested" highways at the index values of 10 for urban highways and 6 for rural highways, (for Island County, index values of 12 for urban highways and 10 for rural highways are applied). When compared to traditional technical measures, these thresholds are approximately equivalent to Level of Service (LOS) "D" operation in urban areas and LOS "C" operation in rural areas. Highways above these threshold index values are identified as deficient. (For more about traffic LOS, see the Glossary in Appendix B and for details about Development Impacts, see Appendix H).

Expanding roadway capacity and moving more people with fewer vehicles are congestion relief strategies that are coordinated with operational strategies both to squeeze the most capacity out of the existing infrastructure and also to ensure the effective use of additional infrastructure that is added. Examples of these operational strategies include:

Ramp Metering addresses recurring congestion, which is the result of too many vehicles on the freeway during rush hours and not enough space. Ramp metering regulates vehicles entering the freeway to maintain optimal flow. The benefits of ramp metering include increase in freeway speeds and reduction of accidents (I1 for Construction of ramp meters/Q for operation of the ramp meters).



Ramp metering on Interstate 5 near the University of Washington in Seattle.

Driver and Traveler Information Systems consists of roadway condition and congestion information, construction, maintenance and ferry delay information, and emergency and road closure information. Providing motorists with this information allows them to make route or timing decisions before or during their trip (I1, I2, I3, and Q for construction/Q for operation of the driver and traveler information systems).

Incident Response Teams respond immediately to accidents or other incidents such as hazardous material spills. Rapid response to freeway incidents reduces delay caused by these incidents. WSDOT tow truck operations on the Lake Washington floating bridges and the roving service patrols are also part of this activity (Q for purchase and operation of incident response vehicles).



WSDOT Incident Response Teams help to clear incidents throughout the state, like this one near Tumwater.

Synchronizing Traffic Signals helps to keep arterial traffic flowing. Regular retiming of traffic signals ensures the most effective movement of vehicles along arterials with efficient coordination and minimal delay. WSDOT continues to evaluate new technological advances and will use proven technology where it is shown to increase the efficiency of the transportation system (I1, I2, and Q for construction of signals/Q for operation of the traffic signals).